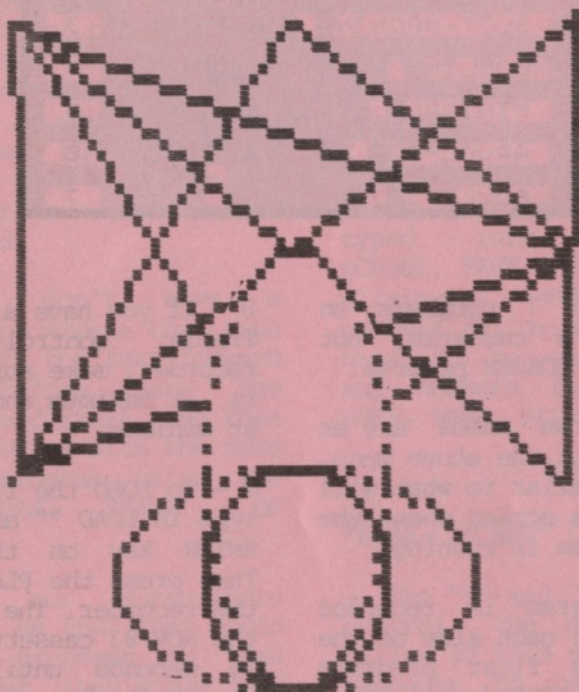


# SYNCHRO—SETTE

THE SUBSCRIPTION MAGAZINE FOR YOUR MICRO COMPUTER  
TIMEX — SINCLAIR



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# This Month's Programs

SYNCHRO-SETTE LOADER FOR MARCH 1984		
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There are 7 programs on this month's cassette, not counting the LOADER program.

The program names are as they appear on the above menu, which is similar to what will appear on the screen when the LOADER program is running.

Each program is recorded only once on each side of the cassette. The first programs that can be LOADED will be of the small size followed by the larger sized programs. The other side of the cassette is a duplicate of the first side.

For you new subscribers who aren't familiar with LOADING procedures for cassette programs, follow these directions:

A - Make sure that the volume setting of the recorder is set at about 80 % maximum.

B - If you have a Bass and/or Treble control on the recorder, make sure the Treble is at maximum and the Bass is at minimum.

C - To LOAD the first program, type in LOAD "" and press the ENTER key on the computer. Then press the PLAY button of the recorder. The lead time on the NOV/83 cassette is about 10 seconds until the first program begins.

The time needed to load the LOADER program is 48 seconds. When the program is loaded, a list of this month's programs will appear automatically.

Shut off the recorder when the LOADER program is loaded. Any of the listed programs can now be loaded into the computer by pressing the appropriate number on the keyboard and then pressing the PLAY key on the recorder. The



loader program loads by searching for the name of the program you want and ignoring any of the other programs it may encounter along the way.

If you want to go directly to a program without waiting, we suggest you first find the tape location of the beginning of each of the programs with your recorder counter. This can be done as you go through the programs the first time, noting the tape location on the counter as each one is being loaded.

If you don't have a counter, approximate the tape position with the fast forward key just before where the program would start, and then LOAD the program with the name of the program using the format LOAD "NAME OF PROGRAM".

Some of our subscribers have told us that they could not get the programs to load by name but they would load with the double quotes. Others have told us that the loader program wouldn't load certain programs. Most have told us that all the programs could be loaded either way. Every customer's cassette is made from the same master tape, so the programs on everyone's cassettes are identical. We feel it is most probably a problem of volume adjustment or recorder design. We have

noticed this situation on some of our recorders.

PROGRAMS (all programs this month are self-running - program's name has inverse last character if self-running  
 $RT = \text{run time} / LT = \text{load time}$ )

There is an approximate 7 to 20 second pause between programs

NOTE! These programs, with minor modification, can be typed into the TS-2068. SCROLL, FAST & SLOW would be eliminated and CODEs and numbers following CHR\$ would have to be changed as would any numbers following USR, POKE, PEEK, PLOT or UNPLOT.

32-54

"BOMB-CATCHER" LT = :53

The "5" and "8" arrow keys control the movement of a pillow in this game that you maneuver to catch bombs that are falling.

55-84

"LAND-MINE" LT = 1:14

In this game, you try to travel through a minefield without hitting a land mine. The game starts with the minefield shown on the screen. There is a delay as the computer hides the mines under the appropriate co-ordinates.

The computer will then ask you how many co-ordinates you want to move. You will be awarded either positive or negative points each time you advance and your position will be marked. If you land on a land mine, you will be sent back to the beginning to start over. The game is over when you reach the end and your score will be determined by the amount of moves versus your total points.

86-143

"SLOT-MACHINE" LT = 2:51

Our thanks to Rick Blewitt and his father John for this program. It simulates the play of a one-armed bandit where the user plays with a certain amount of nickels. You tell the computer how many and then sit back.

There was no documentation regarding rules but it does give a lot of play for the money along with good graphics.

cal 9/2/10

144-174

"BOWLING" LT = 1:31

Although not a full-blown bowling average program, it can be used as a base to include a whole league. It is designed to keep averages, high game and high series for one team.

Start the program with

prompt #1 and enter requested data for how many weeks in the season, how many players and the players' names.

Prompt #2 allows entry of scores on a week by week basis. Prompt #3 can have the data displayed and prompt #4 will allow players' names or scores to be edited. Prompt #5 allows the data to be saved on tape with a file name.

VOL 5/10 175-203

"MINICALC" LT = 1:30

Here is a mini-version of the Visi-Calc type programs. The program starts with a 3 by 7 grid with a blinking cursor at the upper left box. The cursor can be moved with the shift/arrow keys to any box. The "B" key brings it to the first box and the "N" key to the last box. The other commands are as follows:

"V" - allows entry of a numeric value

"F" - allows entry of a formula

"D" - displays the formula in the cursor box

"C" - calculates the formula in the cursor box

A simple example for use of this program might be for a simple payroll application. Let us say that we have 2 employees, one makes \$4.51 per hour and the other \$5.25 per hour. With the cursor in box



A1 press the "V" key. Now enter "4.51" and press enter. move the cursor to box A2, press the "V" key again and enter "5.25". Now move the cursor to the A3 box and using the same value format, enter "40" for 40 hours worked for each employee. Now go to box A4 and press the "F" key. We want to multiply the hourly wage in box A1 times the hours worked in box A3 so enter "A1\*A3".

The box will now contain a graphic "F" in it. If we ever want to check the formula in this box, we need only move the cursor to it and press the "D" key and the formula will be displayed at the bottom of the screen until we press any key but BREAK (try it now).

Now position the cursor in box A5 and enter the formula "A2\*A3" the same way.

You may now calculate either of the formulae by putting the cursor in the appropriate box and pressing the "C" key. The box will then display the appropriate sum until any key (except BREAK) is pressed. Formulae can contain the logical operators <+>, <->, <\*>, </> and <\*> and be up to 32 characters long. They can be longer but an error will occur if you want to display them.

Even though this program is


limited to only 21 boxes and does not have duplication and replication or print-out features (add a COPY command with appropriate input for print-out), it is extremely powerful and easy to use and would make an excellent base for a more sophisticated version.

"BULLETIN"

229-258

Our bi-monthly bulletin board program. Pressing "P" pauses the scroll. Pressing any key restarts it. Pressing "B" makes it move backwards and "F" makes it go forward.

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## Editor Ramblings

### TIME-STAR COMPUTERS

Details are sketchy at this time but there is a company that is planning to acquire merchandising rights to the Timex 1500 and 2068 computers. In a conversation with David Higgenbottom of Trinity Magnum Co. in California, a bold plan to sell these computers under the TIME-STAR name through a nation-wide chain of new stores. Called "THE LITTLE COMPUTER STORE", a franchise system is being developed.

After-market software and hardware companies are also being contacted regarding their products. The customer could enter the store and purchase both hardware and software on the spot. Over 48 companies so far have expressed interest.

These stores might also sell other in-expensive micros with related software and hardware. One of the big

attractions would be that software duplication would be done on location and that consumers could examine programs on the computer before purchase.

Mr. Higgenbottom sees the effort as a metamorphosis for the Timex market with in-roads to be developed in educational institutions.

We wish him luck and success and will help in any way we can. For further information, contact Mr. Higgenbottom at (1-213) 864-7068.

### CONVERSION PROBLEMS

People have been contacting us regarding problems with the software programs designed to convert TS-1000 programs to TS-2068 programs. Without mentioning manufacturing names, the ones mentioned to us would only give partial success.

We experienced problems with the ones we used also except with one, and certain rules had to be followed to the letter.

The one we had the best luck with was the one published in SYNTAX (Dec/83 issue - 1-617/456-3661 RD 2,



BOX 457, HARVARD, MA, 01451)  
called FIRSTLOADER which is  
also available on tape for  
\$19.95 from E-Z Key, Suite  
75-stx 711 Southern Artery,  
Quincy, MA, 1-617/773-1187.

When using this or any of  
the 1000/2068 conversion  
programs, I cannot stress  
enough the importance of  
adhering to the following  
guidelines.

- Make sure the 1000 tape has  
been prepared as clean and  
free of noise pulses as  
possible. Disconnect the EAR  
plug when making the 1000  
copy. Running the recorder on  
batteries rather than A/C  
helps. Purchased software from  
vendors is usually noise free  
and copies don't have to be  
made.

- Once the conversion program  
is in the 2068, advance the  
1000 program in the recorder  
to the segment just before the  
program starts. This segment  
usually lasts for about 5  
seconds and should be  
completely noise free. Listen  
to it with the cords  
disconnected. If there is  
noise in this portion, there  
most probably will be noise  
throughout the program. The  
conversion program will  
identify these noise pulses as  
part of the program and either  
bomb or result in a garbled  
conversion.

The FIRSTLOADER version has  
the advantage of keeping the  
machine language conversion  
program in memory after the  
conversion is complete. If the  
user uses the DELETE command  
to erase the program and CLEAR  
to clear the variables,  
FIRSTLOADER can be called  
again with the USR comand to  
convert the next program. NEW  
will however, destroy  
FIRSTLOADER.

Converted programs will  
have any inverse characters  
converted to normal upper-case  
characters. Line numbers with  
nothing after them usually  
signify commands or functions  
not in the 2068 vocabulary  
such as SLOW, FAST, PLOT  
(different on the 2068),  
UNPLOT, SCROLL and Shift "Q"  
(" ") and must be edited  
accordingly. The numbers  
following commands or  
functions such as CHR\$, CODE,  
PEEK, POKE, PLOT and USR must  
be changed or re-formatted to  
operate properly.

The FIRSTLOADER version we  
used was typed in from the  
SYNTAX issue and occupies  
about 1/2 K of upper memory.  
It worked every time with the  
1000 programs we converted,  
but keep in mind, we have  
equipment that can make very  
clean copies.

Using this program may mean  
a lot of time-saving on your  
part for those favorite

programs you were going to sit down and type in from scratch.

---

### 1000 HI-RES

---

We saw a demonstration of hi-resolution graphics on the TS-1000 and were amazed. Without any hardware changes, either the SW-HI-RES program (\$20.00) or the HI-RES WORD PROCESSOR (\$24.95) can be loaded from cassette tape. Screen resolution is 174 by 255 pixels.

New commands with the SW-HI-RES program include PLOT, UNPLOT, PRINT, PRINTC, DRAW, CLS, SCROL-UP, DOWN, LEFT, RIGHT & COPY. Print-out to the 2040 printer is possible. You can create your own character set and it comes with a sample graphics generator that plots a hi-resolution picture of circles and sine waves to the screen.

The only drawback we could see was that the graphics generation took a considerable amount of time, however, pictures could be saved on tape and recalled instantly when loaded.

The High resolution graphics are generated to the top 22 lines of the screen with the bottom two lines left

intact. The BASIC program that uses a bunch of machine-language sub-routines, can be broken at any time. The screen, however, will not revert back to normal unless the proper USR command is executed. When another user command is used, the Hi-Res picture instantly returns.

The program seems to use two areas of memory to map the screen and the USR calls allow you to toggle back and forth. Whichever one is used, the other is completely eliminated from the screen.

For further information, contact N. ELMALAH, 5100 HIGHBRIDGE STREET 53, FAYETTEVILLE, NY, 13066

---

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## The Computer Tutor

SIMULATING DRAW & CIRCLE  
ON THE TS-1000

Good morning, Class!  
Today's session will be on  
screen graphics for the  
TS-1000.

Unlike the TS-2068, the  
1000 does not have commands  
such as DRAW and CIRCLE. These  
commands can be simulated with  
routines, however, the hi-res  
graphics will be missing.

To simulate the DRAW  
command, enter the following  
program:

```
10 LET X=0
20 LET Y=X
100 INPUT XX
110 INPUT YY
120 LET A=X-XX
130 LET B=Y-YY
140 LET C=(A AND ABS A>ABS
B)
+ (B AND ABS B>ABS A)
150 IF C=0 THEN LET C=.1
160 FOR N=0 TO C STEP SGN C
170 PLOT X+A/C*-N,Y+B/C*-N
180 NEXT N
190 LET X=X+A/C*-N
200 LET Y=Y+B/C*-N
210 GOTO 100
```

This routine starts the  
first plotted point at the  
lower left hand of the screen  
and is determined by the "X"  
and "Y" values in lines 10 and  
20. These of course can be  
changed.

The inputs from lines 100  
and 110 ask for the pixel  
position that the line is to  
be drawn to. The first input  
would be how many pixels from  
the left border (1 to 62) and  
the next input is for how many  
pixels from the bottom (1 to  
42). Enter "20" and "10" for  
these inputs and a diagonal  
line will be plotted and the  
routine will recycle for the  
next inputs.

Now enter two new screen  
co-ordinates and a new line  
will be drawn from the last  
plotted pixel to the new  
destination. The starting  
pixel position of the new line  
is determined by lines 190 and  
200 which reset the X/Y  
values.

Line 140 does all the hard  
mathematics and the program  
uses various trig functions  
which perform quite quickly  
compared to other IF/THEN  
comparison techniques that are  
commonly used.

Unlike the TS-2068 version  
of DRAW, this routine simply  
asks for the screen positions  
that the line is going to be  
plotted to and draws the line

to that position from the end of the last line. With this method you will not accidentally draw a line off the screen where an error message will occur as long as you stay within the specified parameters.

By changing the following lines to read:

```
190 INPUT X
200 INPUT Y
```

you can start the new lines at any position you want.

But so much for straight lines (almost straight). What about curved lines, circles and ellipses? Enter the following simple program:

```
10 INPUT A
20 INPUT B
100 FOR I=0 TO 2*PI STEP
PI/30
110 PLOT 30+A*COS I,B+B*SIN I
120 NEXT I
```

Line 10 inputs the width of the ellipsoid and line 20 inputs the height. If the two inputs are the same, a circle will result.

Now, what about curves? If we look at line 100 we see the segment "2\*PI". This represents the circumference of the circle or ellipsoid. If the "2\*" were missing, only half of the circle or ellipsoid would be plotted. If

you wanted only a fraction of the ellipsoid to appear, add and change the following lines:

```
30 INPUT C
100 FOR I=0 TO 2*PI*C STEP
PI/30
```

The variable "C" would now determine the fraction of the ellipsoid to be plotted and would be entered with line 30 with an input between .1 and 1.

Class dismissed!



Of the Earth's 196,949,970 square miles of area, 48 million square miles of its surface are always snow-covered.



According to Figgie International's Thermometer Corporation of America (TCA), it takes more than 1,000,000 ice crystals to cover two square feet with 10 inches of snow.





LETTERS TO THE EDITOR

Dear Ed,

Certain machine language programs, including ones from Synchro-Sette, will not run on my ZX-81 resulting in an error message - yet, when I put the same tape into my friend's TS-1000, it runs with no problem.

We have checked the listings and they appear identical. We switched RAMPacks (mine is a BYTE-BACK 16K and his is the Timex 16K) and the problem seems to follow the BYTE-BACK RAMPack.

Is my RAMPack faulty? Other programs seem to run with no trouble.

J. Thomas - Lincoln, NE

Dear Jerry,

The explanation we got was that on the earlier BYTE-BACK RAMPacks, certain RAM memory locations conflict USR call functions where-upon the design of the TS RAMPack is

different.

Users have been telling us that non-Timex RAMPacks will not operate on the TS-1500 either, with a variety of malfunctions - Ed.

.....

Dear Ed,

Does the S & S Company have any future plans regarding any kind of subscription computer publications?

L. Peaslee - Bronx, NY

Dear Len,

Not at this time. One of the big problems regarding Synchro-Sette is the lack of material to put into the magazine. Programs can be written on almost every conceivable subject but newsworthy topics are becoming harder to come by. Some companies that supplied software, hardware and news information which were viable a few months ago are no longer in business now.

On the other side of the coin, the purchasing customers of Timex equipment have dwindled to the point where many of the supporting companies feel the odds are against them to advertise

their wares in any publication.

Perhaps the TIME-STAR program (see Editor Ramblings This issue) will turn this around. I think most supporting companies have developed a "wait and see" attitude before they make any commitments.

We will continue to support the Timex computers as long as there is a market - Ed.

Dear Ed,

I purchased a TS-2068 from Timex at the close-out price of \$99.95 and am very impressed with it. I was particularly impressed with your "SPIDERS" program in the January 1984 issue. I wish the volume of the sound output could be increased and there was a 80 column output device.

But for 100 bucks, this is the best deal going! I'm sad to see your publication phase out. I realize the number of subscribers aren't there anymore but I have learned a great deal from your magazine and cassette programs and will stay with you to the end. Thanks again.

S. Greenstein - Colorado Springs, CO

Dear Sherwin,

We are also saddened at the outcome, but who knows what the future will hold - Ed.

## QUICK QUIZ

?????????  
?????????  
?????????  
?????????  
?????????  
?????????

Which country is setting records for production by its dairy cows, even though that country is one of the smallest in the world?



Although most people expect cows to thrive on a diet of water, grass and grain, this country's cattle have learned to love a computer-prepared menu of tomato pulp, orange peels, silage and residues from beer and cheese production. Statistics show they're thriving and so is milk production. Can you name the country?

ANSWER: The country is Israel. Thanks to computerized genetic planning, its cows have helped that country achieve the highest milk production in the world. Since water, grass and grain are three items lacking in that arid land, its scientists have come up with a diet that seems to work wonders. The country's dairy farmers say they still have much to learn from American farmers but report that one of their success secrets is the fact that ALL of their dairies are high producers.





On the TS-1000 we learned that the screen could be addressed directly by POKEing numeric values directly into certain memory locations. The locations that were to be POKEd depended on how much memory the program in the computer took up. The memory locations for the screen resided in an area above the program memory and was said to "float". The first screen location could be determined with the formula "LET X = PEEK 16396 + 256 \* PEEK 16397 + 1".

We also learned that the screen was stored in memory as 24 lines of 33 characters each for a total of 792 memory locations. The first 32 characters of each line on the screen would have their CODE numbers held in memory and could be changed by POKEing that memory location with a different number.

The last row or character should not be POKEd because it held a value of 118 which,

when altered, would cause the program to crash.

Try as I may, I could not find an area in the TS-2068's memory that held the CODE numbers of the characters on the screen.

There is a good reason for this! None of the techniques used to hold screen information for the 1000 are used in the 2068, as far as I can see!

The CODE numbers of the screen characters are not held in memory but exact screen information is retained in memory in a very devious and complicated way.

On page 265 of the owner's manual we find that the screen DISPLAY FILE resides in the memory locations between 4000-57FF hex or 16384 to 22527 decimal. Unlike the 1000, whose screen memory map floats, the 2068's screen map resides in a stationary area. This should make it easy to address, right? Read on ...

One day, while trying to POKE these locations with character CODEs, I discovered I was winding up with some weird arrangement of dots ranging from one dot to a line of 8 dots.

The answer was obvious! The characters on the screen were

not being held in memory by their individual CODE numbers but with a total of 8 numbers for each character. Each character was represented by an 8 by 8 matrix where each line was represented by the visual representation of an 8 digit binary number. The letter "A" would therefore be seen as;

```
0 0 0 0 0 0 0 0 (0)
0 0 1 1 1 1 0 0 (60)
0 1 0 0 0 0 1 0 (66)
0 1 0 0 0 0 1 0 (66)
0 1 1 1 1 1 1 0 (126)
0 1 0 0 0 0 1 0 (66)
0 1 0 0 0 0 1 0 (66)
0 0 0 0 0 0 0 0 (0)
```

The 0s and 1s on the left side are the binary numbers of the letter "A" where the 0's are visually displayed on the screen as "null" or blank dots (PAPER colour) and the 1s are displayed as solid dots (INK colour). The numbers to the right of the binary numbers are their decimal equivalent and it is these that are stored in memory. In other words, it takes 8 numbers, stored in memory, to hold the information for each screen character. The amount of screen locations are 32 characters per line (not 33 as on the 1000) for 24 lines for a total of 768 positions. 8 decimal BIN numbers are in memory for each screen character for a total of 6144 RAM memory locations (6K) to

hold the entire screen map.

Now comes the complicated part! The screen is divided into 3 sections of eight lines each. The top third section resides in RAM at locations 16384 to 18431, the middle third at locations 18432 to 20479 and the bottom third at locations 20480 to 22527. The locations for the lines of bit-graphics for each character are not consecutive as can be demonstrated by the following program:

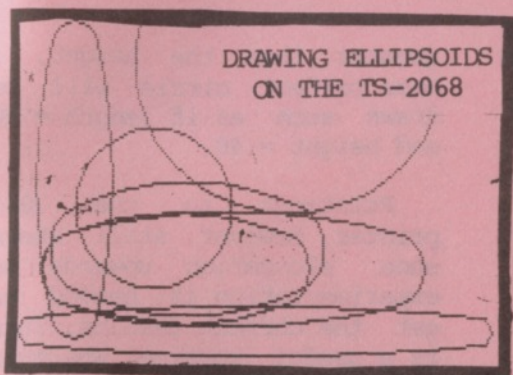
```
100 FOR N=16384 TO 22527
110 POKE N,1
120 PRINT AT 21,20;N
130 NEXT N
```

This routine POKES a single dot to the screen at every possible bit-graphics (BIN) location. You will notice that the screen is scanned in 3 sections with each section being scanned 8 times. The following routine produces a screen grid (bottom 2 lines not in grid) for easy visualization and asks the user for 2 inputs. The first is the character you want to be POKED from the screen and the second is a co-ordinate. Enter either an alphabetic, numeric or graphic character for the first prompt. For the second prompt the following parameters must be observed:

```
TOP THIRD OF SCREEN - 0 TO 255
```

(continued on back page)





The TS-2068 has some unique graphics capabilities as most users already know. PLOT allows Hi-Res plotting of any screen pixel. DRAW allows straight lines (as nearly as the computer can make them) between the last plotted pixel to the new co-ordinates. CIRCLE makes a circle with a slight elliptical shape.

There is no command to draw ellipsoids directly or for that matter, a more perfect circle. The DRAW command, however, can also draw circles or parts of circles. A pixel has to be plotted on the screen first that would be far enough away from the borders so that the DRAW routine does not run out of room.

DRAW followed by 2 numbers, separated by a comma, normally plots a straight line to the co-ordinates of the 2 numbers. If a comma and third number follow, a curved line will result. The straight line distance between the two points is still the same as if

only 2 numbers were used but the curve will occur between the points. Enter the following program:

```
100 INPUT A,B
110 CLS
120 PLOT 50,50
130 DRAW A,B
140 PAUSE 40000
150 CLS
160 PLOT 50,50
170 DRAW A,B,PI
180 PAUSE 40000
190 CLS
200 PLOT 50,50
210 DRAW A,B,PI/2
220 GOTO 100
```

Experiment with inputs such as 50,50 and 30,60 etc. You will notice the slope of the curve changes each time in proportion to the value of the third number. Edit line 170 to read:

```
170 DRAW A,B,PI * x
```

where "x" equals a number in between .1 and 1.65. You now have an indication of how this third number affects the curve.

The CIRCLE command cannot draw a perfect circle but a routine can be written that can draw a circle as perfect as the computer is capable. It can also draw ellipsoids.

The following program will draw a pretty good ellipse with only 9 program lines.

```

10 INPUT "Length? ";l: LET
c=l
20 INPUT "Height? ";h: IF H<C
  THEN LET c=h
30 CLS : LET b=l/(1+h): LET a
  = h/(1+h)
40 PLOT c,c
50 DRAW 1,0,PI*a
60 DRAW 0,h,PI*b
70 DRAW -1,0,PI*a
80 DRAW 0,-h,PI*b
90 GOTO 10

```

The length input will be an approximation of the length from left to right and the height from up to down.

The program actually plots the elipsoids as 4 parts, each the part of a circle determined as a fraction of its circumference by lines 50 to 80.

The variable "c" in lines 10 and 20 determines the starting PLOT positions in line 40 so that the greatest amount of elipsoids can be tested.

The Variables "a" and "b" determined by line 30 and used in lines 50 determine the portion of the circle to be used in each of the 4 elipsoid segments which line up perfectly to give as true an ellipse as can be expected. Remove the CLS command in line 30 to get an overlay on your screen.

If the length is 25%

greater than the height, a near perfect circle will be drawn such as if length = 50 and height = 40.

Print-out to the 2040 printer, however, still shows some elongation upwards so experimentation is needed to get the correct results. This is a useful routine wherever screen graphics requiring circles or elipsoids are needed such as drawings, games or business charts - Ed.

---

(SCREEN CONTINUED)

MIDDLE THIRD	- 2048 TO
2303	
BOTTOM THIRD	- 4096 TO
4351	

The character you enter for the first prompt will appear in the upper left hand corner of the screen. The second prompt must have a number entered that fits into the range above. The character will then be POKED to the new screen location, byte by byte.

This routine may help you write a program in which you can create your own hi-res screen graphics to cover the entire screen. All you have to do is determine the BINARY image of each graphic character you want to appear, convert the binary numbers into decimal and POKE them into the proper memory locations - Ed.